Dr. Paul A. Schule to be lecturer in bacteriology.

DR. FLORENCE PEEBLES, of Bryn Mawr, has been appointed professor of biology in Newcomb College, Tulane University, New Orleans.

ASSISTANT PROFESSOR HAROLD A. EVERETT, of the department of naval architecture and marine engineering of the Massachusetts Institute of Technology, has been appointed to the position of professor of marine engineering in the post-graduate department of the United States Naval Academy at Annapolis.

HENRY JOSEF QUAYLE has been promoted to a full professorship of entomology in the citrus experiment station and graduate school of tropical agriculture of the University of California.

MR. H. SCOTT, of Trinity College, Cambridge, has been appointed curator in entomology in the university.

DISCUSSION AND CORRESPONDENCE

THE FUNDAMENTAL EQUATION OF MECHANICS AGAIN

TO THE EDITOR OF SCIENCE: I have followed with the utmost interest the correspondence in SCIENCE on the proper method of teaching the relation between force, mass and acceleration, and have heretofore refrained from adding to the discussion. I am mindful that there must be many readers of SCIENCE who have not had any advanced courses in mechanics, but who are trying to present to their students this equation, adaptable to any system of units, in a way that does not seem artificial. The difficulty of teaching this properly to students who have had little practical experience, and no occasion to do any amount of computing, and who will probably not go beyond their first course in physics, must be apparent to all. At the risk of being hissed out, I beg your leave to state a method often used, and which I have always found very successful with my classes at Wells College.

I follow a program very much like that outlined by Gordon S. Fulcher in your issue of April 30. I teach the dependence of acceleration on force, using the same mass, etc.; and set up equations in the form of proportions. The combined equation would then be

$$\frac{F}{F_0} = \frac{M}{M_0} \cdot \frac{A}{A_0}.$$

Then following a method similar to that used in books on geometry in the treatment of the area of a rectangle, I say that we may take as our unit of force that force which gives to unit mass a unit acceleration. Then *numerically* $F = MA$; if the unit of mass be the gram, and of acceleration, the cm. per sec. per sec., then the unit of force is called the dyne. All equations in which a force is computed by multiplying a mass by its acceleration, would give the answer in dynes. But the dyne is inconveniently small. A more natural unit is the weight of a kilo. To obtain the force expressed in the larger unit, "we divide the answer expressed in the smaller units by the number of the smaller units contained in the larger unit." Then I go on to explain that this procedure of taking natural units is very common: one person is head and shoulders above another, a certain type of tree is about twice the height of a man, etc. If you multiply the number of square yards in a floor by the price (in cents) of one square yard of carpet, and you want the answer in dollars, divide by the number of cents in a dollar.

It is easy, then, to go over to the British system, in which we have but an artificial analogue of the dyne. Let us fetch that backward baby, the poundal, into the room for an inspection, at least long enough to learn that the weight of a pound is 32 poundals. Then remembering that, for instance, centripetal force, $= mv^2/r$, is in absolute units, we get that force in pounds' weight by dividing by 32.

I have little sympathy for those who "inflict" on their students such absurd ideas as that we measure sugar, stones or anything else in one kind of pounds, but use a different pound when we find the force necessary to accelerate that mass. And the idea of a gravital is equally bizarre.

As for the metric system, I am almost discouraged at the conservatism of this progressive (?) nation. It is perfectly true that it would involve a large expense to change our manufacturing machinery to conform to the

metric standards, but this could happen slowly. Now that so much is said of scientific management, have the owners of large plants ever taken the trouble to estimate the time spent by their computers on account of our adherence to an archaic system? While abroad, I bought me a carpenter's rule in the metric system, and use this in my shop except when I have to use machinery built on the British system. I make fewer mistakes, and have far less difficulty in reading a metric rule than one graduated to sixteenths of an inch.

The metric system has the advantage in classes in physics that we can spend most of our time on physics, and comparatively little on arithmetic, and perhaps our pupils may help to demand the metric system as the universal standard.

PAUL F. GAEHR

PSYLLIDÆ WINTERING ON CONIFERS ABOUT WASHINGTON, D. C.

THE fact that certain Psyllidæ spend the winter upon conifers is well known,[1] but little has been put on record concerning this habit in the United States. In the vicinity of Washington five species of Psyllids abundantly winter on *Pinus virginiana*. I have more than once taken all five on the same day. On a bright day they are very active, hopping quite as vigorously as in summer. The list includes *Livia maculipennis* Fitch, *L. vernalis* Fitch, *Aphalara calthæ* Linn., *Trioza salicis* Mally, and *T. tripunctata* Fitch. The true food plant or host on which these species breed in no case is pine, the conifer being used only as an alternate food plant and winter shelter. The habit of resorting to conifers is not restricted to the cold season, however, as the records show. *Livia vernalis* has been taken on pine in June, July and September, also, *Aphalara calthæ* in April, and *Trioza tripunctata* in April, May and June.

These Psyllids occur on *Pinus tæda* also, and to some extent on *Juniperus virginiana*. Another species of Psyllid—*Pachypsylla cmamma* Riley—occurs from October to February at least upon juniper and hemlock.

Wintering specimens of two of these species of Psyllidæ differ in appearance from the summer forms. In *Aphalara calthæ* the colors are more pronounced in winter specimens, and in *Trioza salicis* many individuals taken at this season are notably more pruinose than the summer form.

Besides psyllids, a variety of other insects resort to pines in winter. They include leafhoppers of the genera *Empoasca, Erythroneura, Balclutha,* and *Idiocerus,* the cercopid, *Clastoptera,* and the Heteroptera, *Lygus pratensis* Linn., and *Piesma cinerea* Say. *Aradus cinnamomeus* Panz. occurs on these trees throughout the year. The assemblage of winter guests on pine includes also small sawflies, and other hymenoptera, numerous diptera, especially Chironomidæ, and a few beetles and spiders. By beating conifers, scaling off bark, searching through fallen leaves, and sifting, I have made as numerous and varied a catch on many a winter's day, as I have on some days during the more favored season. I may mention that I sought in vain for Psyllids on pines in Maine in early March, getting only diptera and spiders.

W. L. MCATEE

[1] See especially Reuter, O. M., "Hemipteren-Fauna der Palaearktischen coniferen," 1908.

SCIENTIFIC BOOKS

Medicine in China. By the China Medical Commission of the Rockefeller Foundation. New York, 1914.

This volume, containing 113 pages including the appendices, is a summary of the investigations of Chinese medicine by a commission appointed by the Rockefeller Foundation early in 1914. The commission consisted of President Judson, of the University of Chicago; Roger S. Greene, consul-general of the United States at Hankow; Dr. F. W. Peabody, of the Harvard Medical School, and George Baldwin McKibbin. The purpose of the commission was to study the medical schools, hospitals and dispensaries of China with reference to the needs of the country and the desirability of aiding these institutions financially or otherwise. The commission has produced a report which is not only informing, but is full of interest and written in non-technical language.

The statement of the committee that China